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utilize the more difficultly wrought minerals in fabricating stone implements, and thereby reached the polished stone period. In this way, the two forms would be necessarily mingled; but it must be remembered that as a rule the two forms *are not associated*. Where one paleolithic implement is found upon the surface, a hundred are quite deeply imbedded in the soil, and in the underlying gravels. — CHARLES C. ABBOTT, M. D.

INDIAN GRAVES IN NEW JERSEY. — The graves of Indians found here in central New Jersey vary to a considerable degree, and suggest the probability that tribes having different burial customs successively occupied this territory. On the terrace that faces the east side of the Delaware River, below Trenton, where I have gathered thousands of stone implements, the graves are to be detected by the discoloration of the soil and the little series of relics that were deposited in each grave. These graves, now a foot or more deep, were in all probability "surface burials," *i. e.*, the body, encased in skins and covered with bark, was placed *on*, not *in*, the ground. In time the grave would become covered with leaves and sand, and so gradually be covered with a thin layer of vegetable mold and earth. The gradual increase in the depth of the soil, which is ever in progress in wooded countries, would result in making the surface burial really an inhumation, and as such we now find it. This shallow grave, with every vestige of the skeleton long since gone, and simply indicated by a few arrow-points, an ax, and possibly a pipe, bears every indication of antiquity, and yet doubtless is simply the grave of an Indian. There is one feature connected with these graves and the scattered relics, as we find them, that deserves attention. The rude implements, never polished, and made of the river rock, which we have maintained were strictly paleolithic implements, are never found in these graves, or in any graves that we have examined. Had these ruder implements been used as a general thing, at the same time that the polished celt and jasper arrowheads were made, then they would likewise have been deposited in the graves; for the contents of an Indian grave are the implements and ornaments the occupant used and wore during his life-time. Like the implements themselves, these graves are proofs of the great antiquity of man's origin along the Atlantic coast of America. — CHARLES C. ABBOTT, M. D.

GEOLOGY AND PALÆONTOLOGY.

COMSTOCK'S GEOLOGY OF WYOMING. — This report is to be found in Captain Jones's Report upon the Reconnaissance of Northwestern Wyoming including Yellowstone National Park, made in the Summer of 1873. The portion by Prof. Theo. B. Comstock relates to the structural geology of the country passed over, and contains new matter regarding the celebrated hot springs and geysers of the Yellowstone Park, with archæological and philological notes relating to the Indian

tribes, particularly the Shoshones. The report is accompanied by a large colored geological map. We hope hereafter to print some extracts concerning the geysers and Indian inscriptions.

COPE'S CRETACEOUS VERTEBRATES.—This elaborate and lavishly illustrated quarto volume, issued as one of the final reports of Hayden's Survey, forms a worthy successor to the palæontological monographs of Leidy and Lesquereux, also published by Hayden's United States Geological Survey of the Territories.

SCUDDER'S FOSSIL BUTTERFLIES is another exquisitely printed and illustrated monograph of a high order of merit, on a subject quite novel and as interesting to European students as to home observers. We shall return to these works in subsequent numbers.

HYATT'S FOSSIL AMMONITES, with the works previously cited, witness the activity now shown by American palæontologists. Several papers by Professor Hyatt have been issued during the past year, giving the results in brief of the studies of many years on the supposed genetic relations and classification of different groups of Ammonites. Of much interest in connection with the hypothesis of evolution are the papers entitled Biological Relations of the Jurassic Ammonites, and Genetic Relations of the Angulatiidæ. An elaborate monograph by Professor Hyatt of certain groups of Ammonites, particularly the *Arietidæ*, to be illustrated by a number of plates, is to be soon published by the Museum of Comparative Zoölogy.

WINCHELL'S GEOLOGY OF THE BLACK HILLS forms the geological report appended to Captain Ludlow's (U. S. Engineers) Reconnaissance of the Black Hills of Dakota, 1874, but only lately published. The report fills fifty-five quarto pages, embracing also a list of trees and shrubs, and is accompanied by a colored geological map of the route surveyed.

KERR'S GEOLOGY OF NORTH CAROLINA.—Last of all is laid upon our table Prof. W. C. Kerr's Report of the Geological Survey of North Carolina, Vol. I., Raleigh, 1875, containing Physical Geography and Economical Geology, with maps and lithographic plates of fossils, described by Messrs. Conrad and Cope.

THE FOSSIL PLANTS OF AMERICA.—Already the study of the North American fossil plants has supplied, in regard to the distribution of the species at different periods, some important information, which modifies a few of the conclusions derived from European vegetable palæontology. Though the isothermal zones have been evidently of a width proportionate to the age of the geological periods, producing in the Carboniferous times, for example, uniformity of vegetation over the whole northern hemisphere, if not over the whole surface of the earth, it appears that there was already at this period a continental or local facies marked in the groups of vegetation. The North American character is recognized in the coal flora of this continent by Schimper, in his

Vegetable Palæontology, as it has been for a long time exposed by the works and descriptions of American authors, and this facies becomes more and more distinct in the more recent periods. The precedence of vegetable types in the geological flora of this continent is distinctly recognized, and therefore the hypothesis of the derivation of the North American flora from Miocene European types is necessarily set aside. On this last question, former remarks in this paper prove the unity of the present flora, derived by constant succession of related vegetable forms from the Cretaceous, at least. On the question of precedence of vegetable types, it has been remarked that the appearance of land-plants is positively recognized in the Silurian of Michigan, while no land-plants have as yet been described from formations lower than the Middle Devonian of Europe; that also we find already in the Devonian of the United States trunks of conifers recognized as prototypes of the *Araucaria*, which are only found later, in the Subcarboniferous of Europe. Our Carboniferous flora has a number of its forms appearing later in the Permian of Europe. The Triassic flora of Virginia and North Carolina is half Jurassic. A number of Cretaceous genera of the Dakota group are reproduced in the Miocene of Europe, as they are, too, in some of the North American Tertiary vegetable groups, and also in the flora of this epoch. Therefore the vegetation of the European Miocene seems partly referable to the American Cretaceous. And in following the comparison upward, we find, in what is considered the Eocene of the Lignitic of the Rocky Mountains, a larger number of forms identical or closely allied to European Miocene species, while the Miocene group of Carbon represents the youngest type of the Tertiary flora of Europe and Greenland, with species of *Platanus*, *Acer*, etc., scarcely distinguishable from indigenous species of our present flora. — *Lesquereux's Review of the Fossil Flora of North America*. (Bulletin of Hayden's Survey of the Territories, second series, No. 5, November, 1875.)

FOSSIL VERTEBRATES OF NEW MEXICO. — Professor Cope, in a preliminary report to Lieutenant Wheeler, in charge of the United States Geographical Survey west of the one hundredth meridian, enumerates eighty-three species of vertebrate animals as having been discovered by him in the deposits of the Eocene lake that once covered the northern and western parts of New Mexico. Of these, eight are fishes, twenty-four reptiles, and fifty-one mammals. Of the whole number, fifty-four species were introduced for the first time to the notice of scientists. This fauna is nearly related to that of the Eocene of Wyoming in many respects, but differs in the different distribution of many of the genera. Thus, *Palæosyops*, a genus abundant in Wyoming, is not found in New Mexico, while *Bathmodon*, which does not occur in the Bridger beds of Wyoming, is the most abundant type in New Mexico, parts of over one hundred and fifty individuals belonging to seven species having been found by Professor Cope. Small tapiroid animals of the genus *Ovohip-*

pus are abundant, and at least eleven species of lemurine monkeys were found. The carnivorous animals discovered numbered eleven species, some of which were as large as the jaguar, or larger. They are all quite distinct from living genera excepting one genus, which is related to the Asiatic civets. Some very small insectivora were also found, one of which is not larger than a small shrew. The waters of the lake abounded in turtles, crocodiles, and gar-fishes.

GEOGRAPHY AND EXPLORATION.

WHEELER'S RECONNAISSANCE OF SOUTHERN NEVADA. — This expedition spent six months in exploring southern and southwestern Nevada in 1869; the results, however, were not published until 1875. The report contains much new information regarding the Indian tribes and southern Mormon settlements. The chief geographical point of interest is the erasing of Preuss Lake from the maps, which was in 1872 found by Lieutenant Wheeler to be the southern shore of Sevier Lake.

AFRICAN TRAVEL. — An expedition to Central Africa up the Congo River, under Dr. Güssfeldt, failed to accomplish its object owing to the fact that the natives are poor carriers, and were in dread of meeting cannibals in the interior, as well as from the ill-health of Dr. Gussfeldt. Valuable collections were made, however.

THE PACIFIC COAST OF AMERICA. — Mr. A. L. Pinart, so well known for his researches in Alaska, partly in connection with Dr. W. H. Dall, has received a commission from the French government authorizing him to study the ethnology and languages of the southern races of the west coast of both North and South America. He is at present on a visit to the Indian reservations of Maine and Nova Scotia. Returning thence to San Francisco, he intends to sail for Valparaiso, with a view of determining if possible, besides other things, the source and direction of migration of the native American tribes of both hemispheres.

THE HIMALAYAS AND THEIR GLACIERS. — In Drew's late book, *The Jummoo and Kashmir Territories*, which is highly spoken of by *Nature*, much is said about the glaciers of the Himalayas; glaciers on a scale, as he says, not to be met with except in the Arctic regions. A glacier which he examined at Basha, in Baltistan, was upwards of twenty miles long, and others are to be met with of much greater extent; indeed to judge from the map, this northwest Himalayan region is one huge net-work of glaciers. The largest of all is the Baltoro glacier, thirty-five miles long, which comes down between two lofty ridges; the northern ridges rise in one spot to the height of 28,265 feet, the peak of that height being the second highest mountain known in the world. And yet, adds *Nature*, these glaciers are a mere remnant, the evidence seems to show, of the glacial covering which at one time spread over the Himalayan region.

NORDENSKIÖLD'S ARCTIC EXPEDITION intends in part to sail up the